

WHAT IS CLAIMED IS:

1. A multiband portable radio terminal compatible with a plurality of different communication methods and carrying out communication in a plurality of different frequency bands for the communication methods, said multiband portable radio terminal comprising:

means for producing a signal of an intermediate frequency for transmission;

first signal generating means for generating a first signal having a reference frequency for transmission for each of said plurality of communication methods;

second signal generating means for generating a second signal on the basis of said signal of the intermediate frequency for transmission; and

third signal generating means for generating a signal of a local oscillation frequency for reception by subjecting said first signal and said second signal to predetermined arithmetic;

wherein said local oscillation frequency for reception is equal to a received frequency corresponding to one of said plurality of communication methods.

2. A multiband portable radio terminal as claimed in claim 1, wherein said third signal generating means

forms a single image removing mixer, and said first signal generating means is a signal source for a first variable frequency input side of the image removing mixer.

3. A multiband portable radio terminal as claimed in claim 2, wherein said second signal generating means generates said second signal by dividing the frequency of said signal of the intermediate frequency for transmission used by said first signal generating means to generate a signal of a transmission frequency, and said second signal generating means is a signal source for a second variable frequency input side of said image removing mixer.

4. A multiband portable radio terminal as claimed in claim 3, wherein said intermediate frequency for transmission and a value of said frequency division are set such that frequency of said second signal obtained by dividing said intermediate frequency for transmission becomes equal to a difference between said transmission frequency and said received frequency.

5. A multiband portable radio terminal as claimed in claim 3, wherein each of said first signal and said second signal is formed by signals orthogonal to each other, and as said predetermined arithmetic, said third signal generating means takes in the orthogonal signals

from said first variable frequency input side and said second variable frequency input side for multiplication, and then adds results of the multiplication together to thereby generate said signal of the local oscillation frequency for reception.

6. A multiband portable radio terminal as claimed in claim 4, further comprising:

fourth signal generating means for generating a fourth signal by forming a channel phase-locked loop for each of said plurality of communication methods;

means for multiplying said first signal and said fourth signal together; and

means for outputting a phase error signal by comparing the phases of a signal obtained by said multiplication and a predetermined fixed frequency signal;

wherein said first signal generating means forms an offset phase-locked loop, and the offset phase-locked loop is pulled into synchronism on the basis of said phase error signal to converge a system of the phase-locked loop by reversing polarity of said phase error signal depending on whether said multiband portable radio terminal is in a first communication mode or in a second communication mode among said plurality of communication

methods so that when said multiband portable radio terminal is in said first communication mode, a difference frequency obtained by subtracting said reference frequency for transmission from frequency of said fourth signal becomes equal to said fixed frequency, whereas when said multiband portable radio terminal is in said second communication mode, a difference frequency obtained by subtracting the frequency of said fourth signal from said reference frequency for transmission becomes equal to said fixed frequency.

7. A multiband portable radio terminal as claimed in claim 3, wherein a buffer amplifier is inserted in a signal path between said first signal generating means and said image removing mixer.

8. A multiband portable radio terminal as claimed in claim 7, wherein when said multiband portable radio terminal is in a period of transmission, bias power to said buffer amplifier is turned off.

9. A multiband portable radio terminal as claimed in claim 6, wherein said plurality of communication methods include a time division multiple access (TDMA) method and a code division multiple access (CDMA) method.

10. A multiband portable radio terminal as claimed in claim 9, wherein said first communication mode is a

GSM (Global System for Mobile Communication) employing a communication form of said TDMA method.

11. A multiband portable radio terminal as claimed in claim 9, wherein said second communication mode is a DCS (Digital Cellular System) employing a communication form of said TDMA method.